

## **REMARKS**

The Applicant respectfully requests reconsideration in view of the following remarks and amendments. Claims 1, 3-16, and 18-20 have been amended. Claims 2 and 17 have been cancelled. No claims have been added. Accordingly, claims 1, 3-16, and 18-20 are pending in the Application.

### **I. Objections to the Specification**

The abstract of the disclosure is objected to, because it allegedly contains the legal language “said active electrodes,” “said invention” and “said generator.” In response, the Applicants have amended the Abstract to remove these terms. Further, additional amendments were made to improve the clarity of the Abstract and to correct typographical errors.

The disclosure is objected to because the title allegedly contains a misspelled word. In response, the Applicants have amended the title to replace “localize” with “localized” as suggested by the Examiner.

In view of these amendments, the Applicants respectfully requests reconsideration and withdrawal of the objections to the Specification.

### **II. Objections to the Claim**

In the outstanding Action, claims 8, 9, and 5-12 are objected to under 37 CFR 1.75(c) as being in improper form, because a multiple dependent claim cannot depend from any other multiple dependent claims. In response, the Applicants have amended the claims such that no multiple dependent claims depend from any other multiple dependent claims. Accordingly, the Applicants respectfully request reconsideration and withdrawal of the objection to claims 8, 9, and 5-12.

### **III. Claim Rejections – 35 U.S.C. §112**

In the outstanding Action, claims 1-12 are rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Specifically, the Examiner alleges that claim 1 defines a method claim but contains no steps. In response, claim 1 has been amended to correct a typographical error. Specifically, this claim has been amended to define a device

instead of a method. The Applicants submit that in view of this amendment, claims 1-12 are in compliance with 35 U.S.C. §112, second paragraph. Accordingly, the Applicants respectfully request reconsideration and withdrawal of the rejection of these claims

#### **IV. Claim Rejections – 35 U.S.C. §101**

Claims 1-12 are rejected under 35 U.S.C. §101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e. results in a claim which is not a proper process claim under 35 U.S.C. §101. In response, claim 1 has been amended to correct a typographical error. Specifically, this claim has been amended to define a device instead of a method. The Applicants submit that in view of this amendment, claims 1-12 are in compliance with 35 U.S.C. §101. Accordingly, the Applicants respectfully request reconsideration and withdrawal of the rejection of these claims.

#### **V. Claim Rejections – 35 U.S.C. §102**

In the outstanding Action, claims 1-20 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Publication No. 2002/0120261 by Morris et al. (“Morris”). Claims 1-20 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Publication No. 2002/0077627 by Johnson et al. (“Johnson”). Claims 1-20 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,347,251 issued to Deng. (“Deng”)

To anticipate a claim, a single reference must disclose each element of that claim. Thus, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Also, “[t]he elements must be arranged as required by the claim.” *See In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990) and MPEP § 2131.

In regard to claim 1, this claim has been amended to include the elements originally recited in claim 2, which has been cancelled, and to additionally recite that the device allows “generating electric currents propagating between the active electrodes within the volume of biological tissue.” These amendments are supported, for example, by page 6, lines 38-24, page 6, lines 18-21, and page 6, lines 28-31 of the Specification as filed. The Applicants respectfully submit that Morris, Johnson and Deng fail to teach each element of amended claim 1.

In regard to Morris, this reference discloses several embodiments of an apparatus for superficially treating organ tumors. The Applicants will address the deficiencies of each embodiment successively.

#### **Embodiment Illustrated in Figure 42**

The embodiment shown in figure 42 of Morris is the only embodiment in this reference wherein the apparatus comprises a RF power source 20 having multiple independent channels 20c. However, this embodiment does not disclose adjusting the parameters of voltage and phase applied to each active electrode independently as recited in amended claim 1. Instead, Morris indicates that the multi-channel RF source 20 produces more uniform tissue ablations (see Morris, page 14, paragraph [0155]) which imply that the multi-channel source 20 applies a uniform voltage to the electrodes. Thus, by uniformly applying a voltage to the electrodes, the embodiment shown in Figure 42 of Morris fails to disclose “adjusting the amplitude and the phase of the voltage applied to each active electrode (1-N), such that the parameters of the voltage and the phase applied to each active electrode is adjusted in an independent manner.”

Further, in all the other embodiments disclosed by Morris, the RF power source 20 does not allow feeding each electrode independently of the others as recited in amended claim 1.

#### **Embodiment Illustrated in Figure 1**

In the embodiment disclosed in Figure 1 of Morris, the apparatus comprises a housing 12, several RF electrodes 18, a power source 20, which can be a RF power supply (see Morris, page 4, paragraph [0084] and page 10, paragraph [0126]), and an advancement member 18 for controllably advancing the electrodes 18. However, Morris does not disclose feeding each electrode independently of the others and adjusting the parameters of the voltage and phase applied to each active electrode as recited in amended claim 1. Thus, the embodiment shown in Figure 1 of Morris fails to disclose “adjusting the amplitude and the phase of the voltage applied to each active electrode (1-N), such that the parameters of the voltage and the phase applied to each active electrode is adjusted in an independent manner” as recited in amended claim 1.

#### **Embodiment Illustrated in Figure 41**

In the embodiment disclosed in Figure 41 of Morris, the apparatus comprises a multiplexing device 46 coupled to the power supply 20, allowing energy to be delivered to selected electrodes to achieve a desired spatial pattern of active electrodes (see Morris, page 14,

paragraph [0154]). Here again, Morris does not disclose feeding each electrode independently of the others and thereby adjusting the parameters of the voltage and phase applied to each active electrode as recited in amended claim 1. Thus, the embodiment shown in Figure 41 of Morris fails to disclose “adjusting the amplitude and the phase of the voltage applied to each active electrode (1-N), such that the parameters of the voltage and the phase applied to each active electrode is adjusted in an independent manner” as recited in amended claim 1.

#### **Embodiment Illustrated in Figure 47**

In the embodiment disclosed in Figure 47 of Morris, the apparatus comprises several positive electrodes 18 (active electrode) and a conductive surface 14con which form a return electrode. The return electrode 14con, which comprises one or more conductive areas 14a, can be individually controlled to an on/off state via a switching device 46. However, it can be seen from Figure 47 that the RF source 20 does not allow independent adjustment of the parameters corresponding to the voltage and phase applied to each positive electrode. Thus, the embodiment shown in Figure 47 of Morris fails to disclose “adjusting the amplitude and the phase of the voltage applied to each active electrode (1-N), such that the parameters of the voltage and the phase applied to each active electrode is adjusted in an independent manner” as recited in amended claim 1.

#### **Embodiment Illustrated in Figures 44a-44c**

In the embodiment disclosed in Figures 44a-44c of Morris, the apparatus comprises positive electrodes 18p (active electrode) and negative electrodes 18n (return electrode). However, it can be seen from figure 44b that the RF source 20 does not allow the independent adjustment of parameters corresponding to the voltage and phase applied to each positive electrode.

In this embodiment, the control of the area to be heated is obtained by selecting positive and negative electrodes among the set of electrodes (see Morris, page 14, paragraph [0157]: “*The selection of positive and negative electrodes can be configured to control the area of heating to match the tumor shape and also to minimize heating of surrounding tissue.*”). However, once selected, it is not possible to independently adjust the parameters of voltage and phase applied to each positive electrode. In contrast, the apparatus of amended claim 1 provides independent adjustment of the parameters corresponding to the voltage and phase applied to each positive

electrode. Thus, the embodiment shown in Figures 44a-44c of Morris fails to disclose “adjusting the amplitude and the phase of the voltage applied to each active electrode (1-N), such that the parameters of the voltage and the phase applied to each active electrode is adjusted in an independent manner” as recited in amended claim 1.

Further, the apparatus of amended claim 1 also multiplies the possibilities for modulating the shapes and dimensions of the lesion that is created, without the need for repositioning the electrodes within the tissue. However, in Morris, the active electrodes have to be displaced in order to conform to different shapes of the tumor (see Morris, Figures 44a-44c). Thus, Morris fails to disclose these elements of amended claim 1 as well.

For at least the preceding reasons, each of the embodiments disclosed by Morris fails to teach each element of amendment claim 1. Thus, Morris fails to anticipate amended claim 1. Accordingly, the Applicants respectfully request reconsideration and withdrawal of claim 1 on this basis.

In regard to Johnson, this reference relates to an apparatus 10 for performing tissue characterization by measuring local impedance of the tissue, in order to diagnose a tumor. The apparatus 10 disclosed by Johnson comprises an introducer 12, a power supply 20 and a plurality of resilient members 18 which can be deployed from introducer 12. The resilient members have sensing members 22. Further, Johnson discloses that the apparatus can comprise a switching or multiplexing device 29 for distributing an excitation current among the sensing members. Specifically, Johnson discloses that “Use of switching device 29 allows for the dynamic switching of any of the sensing members 22m to a return electrode 22mc to more readily detect the location of a potential non-uniformity within the sample volume by rapidly scanning different portions of the periphery of the volume.” See Johnson, Page 7, Paragraph [0071].

However, Johnson discloses that the sensing members 22 perform tissue characterization, not localized hyperthermia. In contrast, amended claim 1 recites “[a] device for treating a volume of biological tissue by localized hyperthermia.”

Moreover, Johnson does not disclose feeding each electrode independently of the others and independently adjusting the parameters of voltage and phase the applied to each electrode as recited in amended claim 1.

For at least the preceding reasons, Johnson fails to teach each element of amendment claim 1. Thus, Johnson fails to anticipate amended claim 1. Accordingly, the Applicants respectfully request reconsideration and withdrawal of claim 1 on this basis.

In regard to Deng, this reference discloses a system 10 for performing hyperthermia treatment comprising applicators 20 and an energy supply device including a RF or microwave generator 30, a power splitter 31, amplifiers 32 and phase shifters 33. Each applicator 20 consists of coaxial needles (21 and 22) and a plurality of surrounding grounded secondary needles 23. According to Deng, the coaxial needle (21 and 22) acts as a coaxial cable type antenna (i.e. the coaxial needle converts the RF/microwave signals into EM radiations). See Deng, Column 6, Lines 13-15. Further, The surrounding grounded secondary needles 23 form the bounded EM fields 45. See Deng, Column 6, Lines 16-17 and Figure 2.

However, in the apparatus disclosed by Deng, the needles (21 and 22) are antennas, not electrodes. Therefore, the apparatus disclosed by Deng does not allow the generation of an electric current propagating within the tissue as recited in amended claim 1.

Moreover, in the apparatus discloses by Deng, there is no interaction between the different coaxial needles (21 and 22). In contrast, the device recited in amended claim 1 comprises a plurality of active electrodes (i.e. generating an electric current propagating between the active electrodes within the tissue). Thus, by failing to disclose electrodes, Deng fails to disclose “generating electric currents propagating between the active electrodes (1-N) within the volume of biological tissue” as recited in amended claim 1.

For at least the preceding reasons, Deng fails to teach each element of amendment claim 1. Thus, Deng fails to anticipate amended claim 1. Accordingly, the Applicants respectfully request reconsideration and withdrawal of claim 1 on this basis.

Claim 13 has been amended to include elements analogous to those of claim 1. For at least the reasons discussed above in regard to the 35 U.S.C. § 102 rejection of claim 1, Morris, Johnson and Deng do not disclose these elements of claim 13. Thus, Morris, Johnson and Deng do not teach each element of claim 13. Accordingly, the Applicants respectfully request reconsideration and withdrawal of the rejection of this claim.

Claims 3-12, 14-16, and 18-20 depend from independent claims 1 and 13, respectively, and incorporate the limitations thereof. Thus, for at least the reasons discussed above in regard

to independent claims 1 and 13, Morris, Johnson and Deng do not teach each of the elements of these claims. Accordingly, reconsideration and withdrawal of the anticipation rejection of these claims is requested.

**VI. Additional Amendments to the Claims**

Additional amendments have been made to the claims to cure typographical errors and to improve the clarity of the claims. The Applicants submit that these amendments do not add new subject matter. Accordingly, the Applicants respectfully request entry of these amendments.

### CONCLUSION

In view of the foregoing, it is believed that all claims now pending are now in condition for allowance and such action is earnestly solicited at the earliest possible date. If there are any additional fees due in connection with the filing of this response, please charge those fees to our Deposit Account No. 02-2666. Questions regarding this matter should be directed to the undersigned at (310) 207-3800.

Respectfully submitted,

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### **CERTIFICATE OF TRANSMISSION**

I hereby certify that this correspondence is being submitted electronically via EFS Web to the United States Patent and Trademark Office on the date noted below.

Suzanne Johnston

5/4/09  
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